

United States Department of Agriculture,

DIVISION OF AGROSTOLOGY.

[Grass and Forage Plant Investigation.]

FLORIDA BEGGAR WEED.

(Also Known as Beggar Weed, Florida Clover, Giant Beggar Weed.)

(Desmodium tortuosum.)

DESCRIPTION.

Florida beggar weed is an erect annual, a native of the West Indies, and perhaps also of southern Florida. It is a leguminous plant with rather woody stalks from 3 to 8 or 10 feet high, bearing an abundant leafage above and when in flower tipped with much-branched erect panicles, the ascending lateral branches often 8 to 12 inches long. The seeds are borne in many-jointed prickly pods, which break apart at maturity and are carried about by sticking to the bodies of animals or the clothing of persons. The plant is hairy throughout, and has trifoliate leaves, the obliquely rhomboid leaflets being from 2 to 4 inches long. Florida beggar weed is closely related to the beggar weeds or beggar lice of northern woodlands and prairies. Being a subtropical species, it is adapted to cultivation either as forage or for soil renovation in subtropical regions. It now ranks in the estimation of the planter with velvet bean, though perhaps its sphere of usefulness is not so extended as the latter.

FIG. 1.—Beggar weed (*Desmodium tortuosum*).

BEGGAR WEED AS A FERTILIZER.

In common with all other leguminous plants, the beggar weed has the power of taking nitrogen from the air by means of tubercle-forming bacteria in its roots. Beggar weed may be used as a nitrogen gatherer by the farmer, who is thus enabled to procure at small expense large quantities of this most valuable fertilizer or plant food.

It has been reported by farmers who have grown beggar weed in their orchards and corn fields that the texture and color of the soil have been changed within two years as a result of plowing under the annual crops of beggar weed. It grows best on light, sandy soils and makes its rankest growth when fertilized liberally with superphosphate and muriate or sulphate of potash. Sandy soils do not retain an excess of phosphoric acid and potash in the same manner as clayey soils unless there is a good deal of humus or decaying organic matter present, and it is of the highest importance, if the fertility of such light soils is to be increased, that large quantities of some form of green manure be given them. This can best be done by growing leguminous crops, such as beggar weed or velvet bean, which not only supply a rank bulk of vegetation, but contain larger amounts of nitrogen than the non-leguminous crops. Humus added to the soil makes it more retentive of moisture and improves its physical condition; and the humus acts as a reservoir of surplus inorganic plant foods, preventing or retarding their leaching into the drainage waters. A crop of beggar weed turned under, will, when decomposed, retain near the surface in ready reach of the roots of succeeding crops more of whatever fertilizers are subsequently applied. Besides adding a large amount of nitrogen to the soil, the beggar weed takes up large quantities of lime and potash, about one-half of the total amount of ash consisting of these two elements. Analyses show that one ton of beggar-weed ash contains 508 pounds of lime, 230 pounds of phosphoric acid, and 482 pounds of potash, valued, when purchased in the form of commercial fertilizers, at about twenty dollars. One ton of beggar-weed hay contains about 38 pounds of nitrogen. It requires from 20 to 25 tons of hay to yield one ton of ash. At a four-ton yield per acre, which is not an unusual one, the fertilizing value of the crop would be about as follows: 150 pounds of nitrogen, at 15 cents per pound, \$22.50; phosphoric acid and potash worth \$5.25, making a total of \$27.75. A four-ton crop of beggar weed would therefore, if turned under as green manure, supply an equivalent of half a ton of the best commercial fertilizer for the use of the succeeding crop in the rotation.

HOW TO SOW THE SEED.

For a crop of seed, beggar weed should be sown at the rate of 5 or 6 pounds of clean seed per acre. If grown for hay, from 8 to 10 pounds should be used. It should not be sown until the ground is warm and moist, and the clean seed is preferable to the pods because of the more uniform germination and better stand which may be obtained. The seed is about the size, shape, and color of red clover and weighs about as much to the bushel. It is now on the market at a price low enough to place it within the reach of any farmer.

If sown at the beginning of the summer rains the seed need not be covered. It must not be buried too deeply else the young plants will not be able to reach the surface. By sowing at the beginning of summer two crops may be secured. If cut for hay at the time the first flowers appear the roots will send up a second crop, which may be saved for seed, and enough seed will scatter to insure a crop the next season. The seed may also be scattered in the corn rows at the time of the last cultivation or at the beginning of the rains in June. Then, after the corn has been stripped or cut for fodder, the beggar weed may be mown for hay or harvested for seed. The crop should be cut for hay when it is about 3 or 4 feet high, or at the beginning of the blooming period. If cut after full bloom many of the lower leaves will have fallen and much of the best part of the crop will be lost.

ITS VALUE AS A HAY CROP.

Beggar weed makes a very fine quality of hay, which is relished by all classes of farm stock.

According to analyses made at the Florida Experiment Station of the upper parts of plants not yet in seed, 100 pounds of hay contained 19.4 pounds of crude protein. When cut after the seed had ripened the crude protein had decreased to 15.75 pounds, the fat and non-nitrogenous extracts from 45.4 pounds to 42.7 pounds, and the crude fiber or indigestible portion had increased from 19.6 to 26.5 pounds. An average of two analyses of the entire plant, including the woody stems, the one made from plants in green seed, the other from those not yet seeding, indicated 11.85 pounds of crude protein in 100 pounds of hay. This may be taken as representing more nearly the crude protein value of average beggar-weed hay than the larger quantity shown to be present in the upper, more leafy, and more tender portion of the plant.

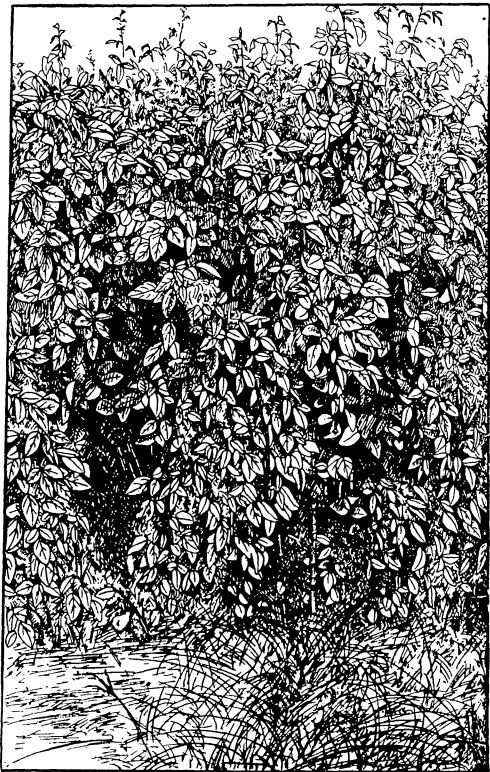


FIG. 2.—Florida beggar weed, grown at the Mississippi Agricultural Experiment Station—plants 7 to 8 feet high.

If in cutting this crop only the upper leafy parts were saved then the higher percentage of protein might be taken as representing the value.

COMPARED WITH OTHER FORAGE PLANTS.

Digestion experiments with beggar-weed forage have not been made, but judging from the comparison of the analyses with those of red clover, the nutritive ratio would be about the same. There are 12.3 pounds of crude protein in 100 pounds of red clover hay, 15.2 pounds in crimson clover, 15.4 in soy bean, 16.6 in cowpea, and 14.3 in alfalfa. In the beggar weed the percentage of crude protein is less than in red clover, because there is a much larger amount of crude fiber due to the larger and more woody stems. The percentage of loss in feeding beggar-weed hay is accordingly greater. On the other hand, the yield per acre is higher than that of red clover, ranging from 3 to 5 or even 6 tons per acre, especially when two crops are cut.

BEGGAR WEED AS A FEED.

Beggar weed hay may be fed to best advantage by adding to the ration some coarse forage which contains a smaller amount of crude protein and more carbohydrates. In this way all of the digestible portion of the crude protein in the beggar weed may be utilized. If more is fed than can be utilized, that is to say, if the nutritive ratio of the ration is too narrow, the surplus of crude protein will be wasted. The crude protein is the nitrogenous muscle-making element in the food, while the digestible carbohydrates, including a portion of the fiber, and the fat, starch, gums, and sugars are used up in producing heat and energy. Crude protein enters into the formation of lean meat and it is necessary for a forage to contain enough nitrogenous food to enable the animal to make new blood, tendon, and bone, and a substantial increase in weight. Nitrogen enters into the fibrin of blood, the albumen of muscle, the gelatine of bone and tendon, and the casein of milk, and to a certain extent into the surplus fat. For the production of new and the repair of worn out tissues the presence of crude protein in the forage is essential. The animal can not make satisfactory growth if fed a forage deficient in crude protein. Hence the great value of leguminous forage crops.

After the seed crop has been harvested, the beggar weed comes up again, the rowen supplying fine pasturage until killed by frosts. It never becomes a bad weed. The seeds do not sprout until the ground is warm, and it may be used as a rotation crop, following early spring vegetables or corn, the seeds remaining in the ground and making their appearance after these crops are out of the way. As a hay plant it is superior to velvet bean on account of the ease with which it may be cut with an ordinary mower. It is also a

better crop to sow in orchards for green manure because it is not, like the velvet bean, a climber, and does not have to be kept out of the trees.

This plant is one of the hosts of the root knot (*Heterodora radicola*). Professor Rolfs states that the "cowpea is frequently attacked, the velvet bean occasionally, and the beggar weed rarely." The nodules formed by this worm resemble the tubercles formed by the nitrogen-gathering bacteria but may be distinguished by microscopical examination.

ADAPTABILITY TO LIGHT SOILS.

Grazing and the production of hay for home consumption or sale are each year becoming more important industries in the Southern States as a natural result of the diversification of crops. Great quantities of hay were formerly shipped South, it being rather a common opinion among Southern farmers and planters that good hay could not be grown. This opinion is, however, no longer held and there are many progressive farmers in the South who have abandoned the cultivation of low-priced cotton in favor of a more remunerative hay crop. There is no good reason why the South should not grow every pound of hay that is needed for feeding work stock, nor is there any reason why butter, cheese, and meats should not be produced. Many of the farms in the South are not suited to the growth of timothy and red clover, but there are plenty of good leguminous hay crops and pasture grasses which equal or surpass them in yield or feeding value. Some leguminous forage crop should be grown on every farm. With beggar weed, alfalfa, velvet bean, soy bean, and cowpea, there is a good list to choose from. Beggar weed is, perhaps, the best of these for the lighter, sterile sandy soils, including the hammock and pine lands of Florida and the sandy pine lands along the Gulf Coast.

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